

Appln. No. 09/997,556

Attorney Docket No. 10541-542

II. Remarks

Claims 1, 3-10, 12-19, and 21 stand rejected. Claims 1, 4, 6-10, 13, 15, 16, and 18 are being amended. Claim 19 and 21 are being cancelled. Accordingly, after entering this amendment, claims 1, 3-10, and 12-18 remain pending.

As recited in amended claims 1 and 10, the claimed invention is directed to apparatuses for cooling a grinding system. The grinding system includes a grinding tool with a grinding surface that spins at a predetermined velocity and *a means for supplying a coolant material* at substantially the same predetermined velocity.

Under 35 U.S.C. § 112, ¶ 6, an element in a claim expressed as a means for performing a specified function is to be construed to cover the corresponding structure described in the specification and equivalents thereof. Therefore, the clause "a means for supplying a coolant material," as recited in amended claims 1 and 10, is interpreted to cover the structure described in the specification.

Referring to the specification of the present application, the specification states that a nozzle is shaped and sized to supply a coolant material at substantially the same velocity as a grinding surface, and further states that this is accomplished by using a predetermined velocity for the grinding surface and adjusting the size and shape of the nozzle. (See, e.g., page 4, lines 2 through 7.) Accordingly, the corresponding structure for "a means for supplying a coolant material" is a nozzle shaped and sized to supply coolant material at substantially the same predetermined velocity as that of the grinding surface.

Spraying the coolant material at the same velocity as that of the grinding tool offers certain advantages. In conventional systems, excess heat is transferred away from the grinding system by a coolant material sprayed at a fixed point without

Appln. No. 09/997,556

Attorney Docket No. 10541-542

consideration of the velocity of the coolant material relative to the velocity of the grinding surface. In such systems, therefore, a significant amount of coolant is wasted. On the other hand, the apparatuses of the present invention eliminate or minimize coolant wastage by matching the speed of the coolant with that of the grinding surface.

Reconsideration and re-examination of this application in view of the above amendments and the following remarks are respectfully requested.

Claim Rejections – 35 U.S.C. § 103

Claims 1, 3-10, 12-19, and 21 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,454,636 to Iwabuchi.

Iwabuchi merely discusses, at column 10, lines 30-39, a "coolant La may be positively and sufficiently supplied to the grinding point P1 at the pressure and the flow rate at which a cooling of the vicinity of the grinding point P1 and a discharge of the grinding chips may be sufficiently performed." As the Examiner concedes, Iwabuchi says nothing about a nozzle that sprays a "coolant material at substantially the same predetermined velocity." Thus, Iwabuchi does not describe the structure corresponding to "a means for supplying a coolant material," as required by amended claims 1 and 10, namely, a nozzle shaped and sized to spray a coolant material at substantially the same predetermined velocity.

Indeed, Iwabuchi clearly fails to appreciate the advantages of minimizing coolant wastage. Absent an appreciation of these advantages, there is no suggestion of providing coolant material at the same velocity as the velocity of the grinding surface, as now required by amended claims 1 and 10.

-7-



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Appln. No. 09/997,556

Attorney Docket No. 10541-542

Because Iwabuchi neither teaches nor suggests providing coolant material at the same velocity as the grinding surface, it must be concluded that Iwabuchi cannot render claims 1 and 10 as obvious. Accordingly, reconsideration of the rejections under 35 U.S.C. § 103(a) and allowance of claims 1 and 10 are respectfully requested.

Since claims 3-9 and 12-18 depend from claims 1 or 10, directly or indirectly, the reasons for allowance of claims 1 and 10 apply as well to the dependent claims.

Conclusions

In view of the preceding amendments and remarks, it is respectfully requested that all of the pending claims (claims 1, 3-10, and 12-18) are in condition for allowance. Such action is respectfully requested.

Respectfully submitted,

March 22, 2004
Date



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